R E M A R K S

Claims 6, 7 and 12 were amended to include a feature of claim 2.

With respect of Rule 116, entry of the above amendments is respectfully requested, since the amendments to claims 6, 7 and 12 involve features that were set forth in the claims prior to the final rejection and the other amendments involve only cancellation of claims and amendment of claims to delete dependencies on cancelled claims.

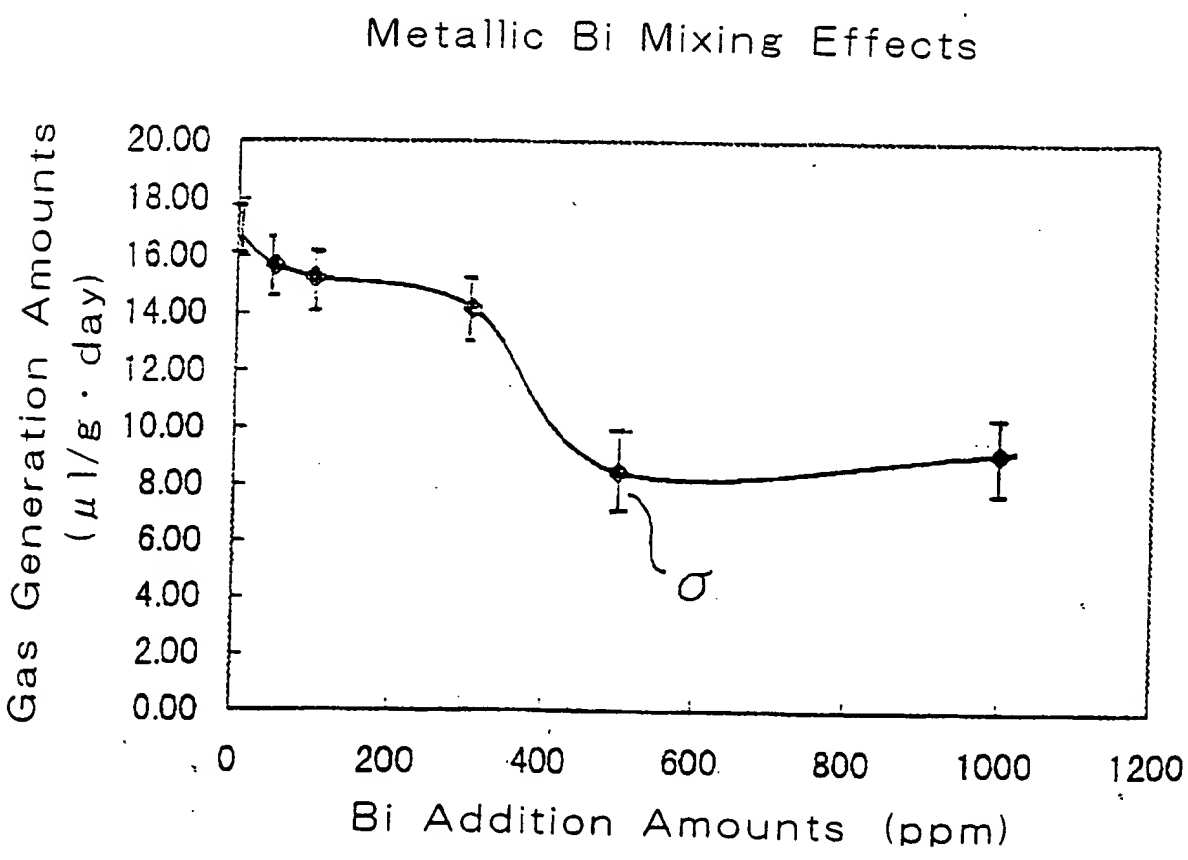
The presently claimed invention is directed to the following Embodiments:

Embodiment (1): A negative electrode active material for use in an alkaline cell comprising a dry mixture of a conventional alloyed zinc powder and a powder of Bi as an additional metal incorporated in said mixture in an amount of 50 - 1000 ppm by weight based on the amount of the conventional alloyed powder (see applicant's claim 2).

By the addition of a metallic powder of Bi in an amount of 50 to 1000 ppm, the amount of hydrogen gas generation from an alkaline cell comprising the negative electrode active material of the present invention is substantially reduced, as compared

with the case wherein the prior art negative electrode active material (inclusive of the gel of Shinoda et al.) is used. Such desirable result of the presently claimed invention is shown in Fig. 1 of the present application, which is reproduced as follows.

Fig. 1



Embodiment (2): A negative electrode for use in an alkaline cell of low gas generation comprising a mixture of a powder of Bi and a conventional alloyed zinc powder, the mixture being prepared by dry mixing the powder of Bi in an amount of 50 to 1000 ppm and the conventional alloyed zinc powder (see applicant's claim 6).

Embodiment (3): A method of preparing a negative electrode active material for use in an alkaline cell comprising mixing a conventional alloyed zinc powder with a powder of Bi in an amount of 50 to 1000 ppm as an additional metal (see applicant's claim 7).

Embodiment (4): A method of preparing a negative electrode active material for use in an alkaline cell comprising mixing a conventional alloyed zinc powder with a powder of Bi as an additional metal, the additional metal added in an amount of 50 to 1000 ppm by weight based on the weight of the conventional alloyed zinc powder (see applicant's claim 8).

Embodiment (5): A method of preparing a negative electrode active material for use in an alkaline cell of low gas generation comprising dry mixing a conventional alloyed zinc powder with a

powder of Bi in an amount of 50 to 1000 ppm (see applicant's claim 12).

Claims 1, 6, 7, 12, 15 to 17, 19, 21, 22 and 24 were rejected under 35 USC 102 as being anticipated by Shinoda et al. USP 5,376,480 for the reasons set forth beginning at the middle of page 3 and continuing to page 4, line 3 of the Office Action.

It is respectfully submitted that the anticipation rejection is moot in view of the present claims.

Claims 2, 4, 8, 10, 14, 18, 20 and 23 were rejected under 35 USC 103 as being unpatentable over Shinoda et al. USP 5,376,480 for the reasons beginning at the middle of page 4 and continuing to the second paragraph on page 5 of the Office Action.

It was admitted in the Office Action that Shinoda et al. do not explicitly teach the amount of or particle size of the bismuth dry mixture with the zinc alloy.

Shinoda et al. teach that In, Pb, Ga or Bi should be added in the form of an oxide or a hydroxide thereof to provide a gel form negative electrode of an alkaline battery. In contrast to Shinoda et al., in the presently claimed invention only a metallic powder of Bi is used as an additional metal to be dry mixed with a conventional zinc alloy powder. The applicant has

informed the undersigned that, generally speaking, it would not have been expected that the use of a metallic powder of Bi is always as equally effective as the use of an oxide or a hydroxide of any one of In, Pb, Ga and Bi.

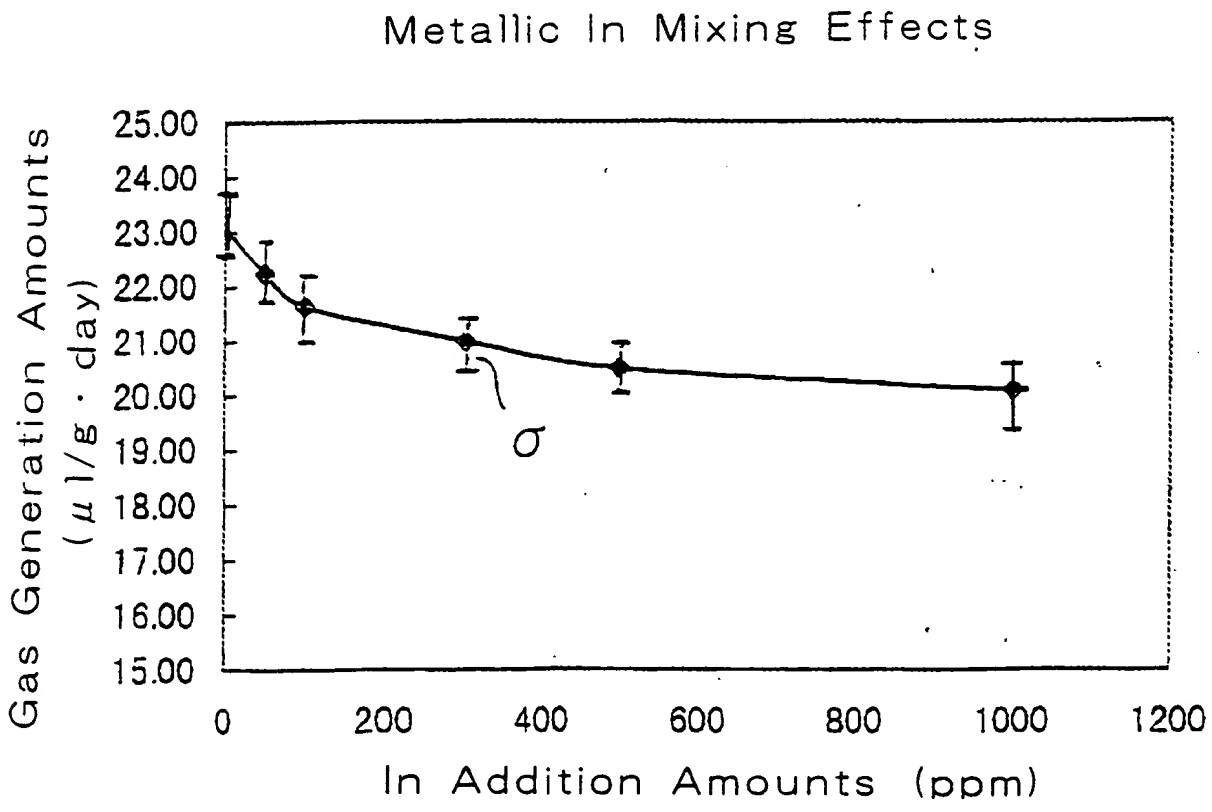
In the working examples set forth in Shinoda et al., the effect of using only In_2O_3 is described. Shinoda et al. discuss only one example of an amount of the addition of In_2O_3, which is 0.1 parts by weight per 430 parts by weight of zinc alloy powder (see TABLE 1 at the top of column 5 in Shinoda et al.). This corresponds to 233 ppm by weight of In_2O_3 based on the amount of zinc alloy powder (because $0.1 \div 430 = 233 \times 10^{-6}$) or corresponds to 193 ppm by weight of In on the same basis (because $In_2/In_2O_3 = 0.83$). Although this amount of an additional element may fall within the range of 50 to 1000 ppm, which is recited in the present claims for the amount of Bi addition, **in Shinoda et al., the additional metal is not Bi, but In**, while in the applicant's invention 50 to 1000 ppm is the amount of the Bi addition.

Moreover, Shinoda et al. do not teach and do not suggest that the addition of the aforementioned amount of In or In_2O_3, would result in a negative electrode active material for use in

an alkaline cell having low gas generation, which is provided by the presently claimed invention.

Furthermore, the present inventor has shown that although the addition of a metallic powder of In in an amount of 50 to 1000 ppm is also effective to reduce the amount of hydrogen gas generation, in addition of In is much less effective than the case when Bi is added to the same kind of zinc alloy powder. In this regard, see Figs. 1 and 2 of the present application (Fig. 1 is reproduced hereinabove and Fig. 2 is reproduced hereinbelow).

Fig. 2



It is emphasized that the presently claimed invention is directed to the case wherein metallic Bi powder is used as an additional metal, and that the present claims do not recite that a metallic powder of In is used. This serves to patentably distinguish the present invention from the prior art, inclusive of Shinoda et al. Accordingly, it is respectfully submitted that it would not be possible, even for those versed in the art, to foretell that the addition of Bi would be very effective to reduce the amount of hydrogen gas generation from a cell comprising a dry mixture of metallic Bi powder and conventional zinc alloy powder, based on the teaching given in Shinoda et al.

Shinoda et al. teach only the relationship between the time of agitating a gel (stirring period, minutes) and the amount of a liquid leaked from a cell (leak occurring rate, %). Shinoda et al. do not teach and do not suggest the remarkable result of depressing gas generation from a novel negative electrode active material obtained by the present inventor that has been attained by using a dry mixture of a metallic powder of Bi in an amount of 50 to 1000 ppm by weight and a conventional alloyed zinc powder.

The difference between the working and the comparative examples given in Shinoda e al. is no more than the difference

between the addition of In_2O_3 and the addition of $InCl_3$. This can teach only that the leak occurring rate varies depending on the difference of anion species, providing that the same cationic species (In^{3+}) is used. Accordingly, this comparison cannot show whether or not the use of In as a cationic species is effective for depressing the leakage of the liquid from a cell, as compared with the case when another cationic species is used. Namely, no suggestion can be obtained therefrom for the attainment of the present invention.

In principle, Shinoda et al. relate only to the reduction of agitating time in making a gel for use as an active material for a cell. This is substantially different from the present invention which aims at providing an improved negative electrode active material for use in an alkaline cell by selecting a specific element (a metallic powder of Bi), for adding it in a specific range of amount (50 to 1000 ppm) to a specific zinc alloy powder (a conventional zinc alloy powder, i.e., a powder containing at least one component selected from the group consisiting of Al, Bi, In, Ga, Sn and Pb) in a specific manner (dry mixing) for the purpose of further improving the prior art negative electrode active material, which was already an

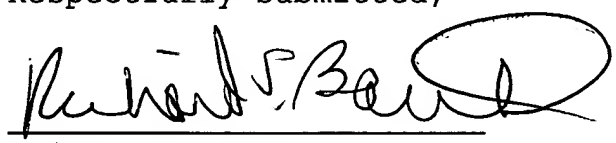
extremely high level product.

In summary, it is thus respectfully submitted that it would not be possible for a person of ordinary skill in the art to attain the present invention based on the teachings given in Shinoda et al. It is therefore respectfully submitted that applicant's claimed invention is not anticipated and is not rendered obvious by Shinoda et al.

Reconsideration is requested. Allowance is solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,



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